

CLAIMS

WHAT IS CLAIMED IS:

1. An assembly for securing leaflets of a cardiac valve together at a point of apposition between the valve leaflets, said assembly comprising:
 - a fastener;
 - a means for temporarily securing said fastener to said leaflets; and
 - a means for permanently securing said fastener to said leaflets.
2. The assembly according to claim 1, further comprising a delivery sheath for delivering said fastener from outside a patient's body to said valve leaflets.
3. The assembly according to claim 2, wherein said sheath is selected from the group consisting of a catheter and a cannula.
4. The assembly according to claim 1, wherein said assembly further includes at least one of a pressure monitoring probe and a flow monitoring probe.
5. The assembly according to claim 4, wherein at least one of said pressure monitoring probe and said flow monitoring probe is configured to be delivered through a lumen of said delivery sheath.
6. The assembly according to claim 2, wherein said delivery sheath comprises said means for temporarily securing said fastener to said leaflets.
7. The assembly according to claim 2 wherein said fastener comprises said means for permanently securing said fastener to said leaflets.
8. The assembly according to claim 1 further comprising an anchoring mechanism attached to said fastener.

9. A method for securing together leaflets of a cardiac valve of a heart having an apex, said method comprising:

- (a) temporarily grasping the leaflets of a valve together at a selected apposition point;
- (b) measuring at least one of blood flow and pressure gradient across said valve;
- (c) determining whether to permanently secure said valve leaflets at said selected apposition point based upon at least one of said measured blood flow and pressure gradient; and
- (d) performing one of permanently securing said leaflets together at said selected apposition site or releasing said grasped leaflets.

10. The method according to claim 9, further comprising, prior to said step (a), measuring one of at least blood flow and pressure gradient across said valve to obtain a baseline measurement(s).

11. The method according to claim 10, wherein step (c) comprises comparing said measurement(s) of step (b) with said baseline measurement(s).

12. The method according to claim 9, further comprising repeating said steps (a) through (d).

13. The method according to claim 12, wherein said steps (a) through (d) are repeated until the measurement(s) of step (b) indicates that the functioning of said valve leaflets is sufficiently improved.

14. The method according to claim 9 wherein said method is performed using the assembly of claim 1.

15. The method according to claim 9 wherein said method is performed by means of an endovascular approach. *pg. 10*

16. The method according to claim 9 wherein said method is performed by means of a surgical approach.

17. The method according to claim 16 further comprising accessing said cardiac valve through an entry site formed within the apex of the heart.

18. The method according to claim 9 wherein said method is performed while the heart is beating. *p 8 line 11*

19. A method for repairing a regurgitating cardiac valve having at least two opposing leaflets, said method comprising:

- (a) providing the assembly of claim 1;
- (b) delivering said fastener to said leaflets;
- (c) selecting a point of apposition between said leaflets;
- (d) temporarily causing said fastener to grasp said leaflets at said selected point of apposition; and
- (e) assessing at least one of blood flow and pressure gradient across said leaflets; and
- (f) determining whether to permanently secure said fastener to said leaflets at said selected apposition point based upon at least one of said assessed blood flow and pressure gradient.

20. The method according to claim 19, upon determining not to permanently secure said fastener to said leaflets at said selected apposition point, further comprising:

- (g) causing said fastener to release said grasped leaflets;
- (h) selecting a second point of apposition between said leaflets;
- (i) repeating steps (d), (e) and (f).

21. The method according to claim 19, further comprising:

- (g) permanently securing said leaflets together at said selected apposition site.

22. The method according to claim 21, further comprising:

- (h) repeating steps (a) through (f) for one or more additional selected apposition sites.

23. The method according to claim 21, further comprising:
(h) anchoring said fastener to a location on the cardiac anatomy.

24. The method according to claim 23, wherein said fastener is anchored to the ventricle wall.

25. The method according to claim 19, wherein said steps (b), (c) and (d) are performed with the assistance of transesophageal echocardiogram.

26. The method according to claim 19, wherein said blood flow is assessed by means of transesophageal echocardiogram.

27. A kit for repairing a cardiac valve, said kit comprising;
an assembly according to claim 1; and
a plurality of said fasteners.

28. The kit according to claim 27 further comprising a fastener delivery sheath configured for endovascularly delivering said fastener to said cardiac valve.

29. The kit according to claim 27 further comprising a fastener delivery sheath configured for delivering said fastener to said cardiac valve through a surgical opening within the chest cavity of a patient.